Appendix 6C

Data Sources and Data Gathering Process

Fact Sheet

Table 6C-1. Data Sources and Data Gathering Process

Item	Source	Approx. # of data points	Data gathering process
Casings	· Longhorn Partners Pipeline Linefill Database, prepared by Williams March 12, 1999. · EPC Pipe-to-Soil Potential Survey, 1998	115	A casing is considered shorted if potential difference between structure and casing is less than 100 mV. Casing code is either shorted, clear, or unchecked.
CIS survey 1999	Close Interval Survey conducted by Corrpro	1081	The CIS curves were eyeballed, and stations where the curves dropped below the –850-millivolt line, or where the curve was discontinuous, were entered into a spreadsheet. The spreadsheet data was then labeled as good (for sections less negative than -850 mv), bad (for sections at or more negative than -850 mv) or unknown (for sections where the curve was missing).
Coating specifications	· Longhorn Partners Pipeline Linefill Database, prepared by Williams March 12, 1999. · Project Description	90	Coating type was reported as the code
Depth of cover	· Longhorn Partners Pipeline Master Depth of Cover & Station Comparison, prepared by Williams March 22, 1999. · Williams – Electronic database	3900	Exported database into excel file. Stationing was converted from old Exxon standard to new Longhorn standard. Data was then sorted into four ranges – worst (1) exposed pipe and best (4) greater than 36" of cover
Distance from pump station discharge	· Stationing from Draindown model, Williams Operating Pressure spreadsheet (RAD 03823) · Project description	40500	Using stationing from draindown model, pipeline was grouped into 5 categories based on distance from pump station, Bad (1) being within 2 miles of the pump, and good (5) being greater than 8 miles from the pump.
Hydrostatic test pressure and date	Hydrostatic Tests conducted by Pipetronix, Inc., 1995, and Williams, 1998.	36	The minimum pressure measured during the test is reported as the code.
ILI Dig Outs	Corrpro reevaluation of Vetco ILI Anomalies Listing, March 21, 1996	295	Anomalies were categorized with the following codes: external corrosion, internal lamination, and non-corrosion flaw. A zone of influence of 100 feet was used.

Table 6C-1. (Continued)

Item	Source	Approx. # of data points	Data gathering process
Landslide areas database	U.S. Department of the Interior, U.S. Geological Survey's Open-File Report 97-289, 1997	8	This data was obtained electronically from the USGS. The only change made to the data was to drop the differentiation between incidence of and susceptibility to landsliding. The high, medium, and low probability scores were assigned by the USGS, relating to the percent of an area that can expect slides.
Leak history	· EPC Report of Pipeline Leaks · DOT reportable accident Form 700-1 · RRC H-8 Forms · Fluor Daniels Williams Brothers Company Due Diligence Report, Date · Kiefner Audit Report, 1999	55	The code corresponds to the count (per location) of the different types of leaks: leaks due to design deficiencies, third party damage, corrosion, and incorrect operations. A zone of influence of 200 feet was used (except for unknown cause leaks for which a zone of influence of 400 feet was used).
Normal operating pressures	· Williams operating pressure spreadsheet (RAD 03823) · Electronic survey data · Project Description	8400	Using electronic survey data, friction loss and change in pressure due to elevation difference were calculated for each segment of pipe. Pump pressures were taken from the Williams analysis. Data was then grouped into 5 categories, bad (1) being greater than 100 percent of MAOP, and good (5) being less than 70 percent of MAOP.
One-call reports	Williams One-Call Services, Inc., a wholly owned subsidiary of Williams Holdings of Delaware, 1999	22	This data was entered into a spreadsheet from the paper report from the Williams company. The items entered include dates covered by the report, County, total number of calls, number of calls cleared, number of calls requiring a dispatch, and % of calls requiring a dispatch. The data was sorted by pipeline section and coded as high, medium or low according to number of calls per county.

Table 6C-1. (Continued)

Item	Source	Approx. # of data points	Data gathering process
Overland spread factors		2465	The overland spread potential is a relative scale incorporating a topographic 'particle trace' assessment which shows the potential route of a theoretical drop of spilled product, at approximately 100 meter intervals along the entire pipeline route. The length of this trace to the nearest water body, the slope of the pathway, and the resistance to flow (vegetation versus asphalt, for example) combine to score the spread potential of each trace pathway. Therefore, each ~100 meter of pipeline is scored for the relative dispersion of a spill.
Particle trace analysis	US Geological Survey, 30 meter Digital Elevation Model (DEM)		DEM data processed in Arc/Info and particle traces to simulate overland spread generated in Arc/Info GRID module
Pipe specifications	MOP Inventory – Exxon		Used pipe description which was in electronic form to determine pipe specification (SMYS, wall thickness, welds, etc)
Procedures			Default from Williams Risk Model was used
Repair reports	· EPC AFE Change Diagram and Completion Reports, 1983 – 1996 · Work Order and Damage Report, prepared by Williams, 1998	199	Repair reports were manually entered into a spreadsheet from the original paper documents. The items of interest were the name of the report used, date, location of action taken, stationing no. from, stationing no. to, a description of the work, the reasons for the work, and comments or additional info. This information was formed into a code according to reasons for the repair, such as leaks, corrosion, or upgrade. A zone of influence of 2000 feet was used.
Scour potential	See Chapter 5 for details	83	See Chapter 5 for details

Table 6C-1. (Continued)

Item	Source	Approx. # of data points	Data gathering process
Seismic potential databases	U.S. Department of the Interior, U.S. Geological Survey's Open-File Report 96-532, June 1996	30	This data was obtained electronically from the USGS. The data used were the actual peak ground acceleration and spectral accelerations predicted by the USGS to have a two percent probability of being exceeded within the next fifty years. The number entered is the percent of gravitational acceleration expected to be experienced within a certain area.
Soil parameters databases	U.S. Department of Agriculture, Soil Conservation Service State Soil Geographic (STATSGO) database for Texas, 1994	7	
Subsurface spread factors	See Chapter 5 for details		Categorized a 2 yr relative score risk into H,M,L scale, then converted to point scale.
Surge pressures	· Williams operating pressure spreadsheet (RAD 03823) · Electronic survey data · Project description · Muhlbauer book	8400	Using operating pressures, the pressure increase resulting from an instantaneous valve closing was calculated and added to all points along the pipeline. Although the data includes pressures for valve closures at all stations, they are all identical. By this method, simulating a valve closure at El Paso creates a pressure wave which travels the entire length of the pipeline back to Galena Park with no attenuation. The spike is then added to the pressures for the highest pressure scenario, #2 Fuel Oil at its highest flow rate. Data was grouped in 5 categories, bad (1) being greater than 130 percent of MAOP, and good (5) being less than 100 percent of MAOP.

Table 6C-1. (Continued)

Item	Source	Approx. # of data points	Data gathering process
Test lead readings	EPC Pipe-to-Soil Potential Survey, 1992 - 1998		Approximately 6 years of test lead readings were compiled into an electronic database. Notations were made to indicate readings which met the -0.85 volt pipe-to-soil potential (measured against a Cu-CuSO4 reference half cell), readings which were below this level (criteria not met) and missed readings. The database was filtered for 'bad' readings, which were each assigned a 2000 ft zone-of-influence. A location where readings were 'bad' for more than one year were penalized the most. Single-year 'bad' readings were also penalized. Portions of the pipeline not affected by one of these 'bad'-reading zones received the best risk score.
Training			Default from Williams Risk Model was used
Utility crossings	Longhorn Partners Pipeline Linefill Database, prepared by Williams March 12, 1999.		
Visual inspection reports	EPC Report of Visual Inspection and Repair (Forms PL751 B and C), 1972 - 1996	276	From paper reports, the following information was inserted into a spreadsheet: Reference, Name of Report, Date, Location, Stationing No. from, Stationing No. to, Coating Type, Coating Condition, Remedial Action. The code associated with these inspection reports is a combination of the year of inspection, the condition of the coating, and replacement of the coating if applicable. A zone of influence of 200 feet was used.
Water crossings	US Geological Survey, 1:100K Digital Line Graphs		Crossings derived from pipeline overlay of 1:100K DLG surface hydrology

Table 6C-2. Fact Sheet

Parameter Category		Notes
Specifications		
Number of different pipe specifications	29	Different diameter, wall thickness, grade, and/or seam type
Types of coatings	8	Might be some overlap
Depth of Cover		
Miles of pipe exposed	3.3	
Miles of pipe with 0-18” of cover	91.3	
Miles of pipe with 18-36: of cover	323.6	
Miles of pipe with cover >36”	276.1	
Age		
Miles of pipe older than 45 years	433.1	
Miles of pipe between 2 and 45 years old	15.7	Might be some overlap with other ranges
Miles of pipe younger than 2 years	245.5	
Inspections		
Miles of pipe having recent CIS performed	454.4	1998 survey only
Miles of pipe having ILI within last 5 years	390.5	Disregards 1991 Flowsonics ILI; see Section 4.2.2 for discussion
Miles of pipe hydrostatically tested within last 5 years	685.3	Based on hydrostatic test reports received
Miles of old pipe visually inspected in the last 10 years	11.1	(Visual inspections for the last 24 years are available)
Repairs in last 15 years		
Miles of pipe repaired for corrosion damage	1.1	Includes 100-200 ft “zone of influence” for each leak
Miles of pipe upgraded	0.4	Includes only upgrades from “repairs” database, not new construction
Miles of pipe repaired for multiple reasons	31.3	Includes leak, corrosion, exposure, and “test” type repairs
Miles of pipe repaired for unknown reasons	4.3	Reason not specified on repair report
Miscellaneous Facts		
Number of “water” crossings	842	Includes ditches, canals, and other very minor crossings
Number of road crossings	847	
Number of utility crossings	1019	Indicator of higher third party damage potential and possible CP interferences
Highest density of foreign utility crossings	12 in 200 ft	Another area has 4 in 17 ft.
Miles of pipe with highest “overland spread potential” rank	19.1	Speed and distance of surface transport of spilled product
Miles of pipe with highest “subsurface spread potential” rank	1.3	Speed and distance of ground penetration and transport.
Miles of pipe with highest potential for scour damage	0.3	
Miles of pipe with highest chance of damage from “seismic events”	30.7	“Peak Acceleration” values from USGS
Miles of pipe in area identified as “high” landslide potential	15.3	
Miles of pipe involved in previous leaks	1.4	Includes 100-200 ft “zone of influence” for each leak
Draindown Volumes		
Miles of pipe with relatively high “draindown” potential	215.2	Low spots bounded by higher terrain
Miles of pipe with relatively low “draindown” potential	162.4	Flat topography